The Interstellar Medium: Expected Advances from Spitzer, Herschel, and Beyond

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In this talk I will focus on the expected advances in our understanding of the Galactic Interstellar Medium from both Spitzer and Herschel. Particular emphasis will be placed on heterodyne observations and how detections of molecular emission and absorption lines, previously hidden by the atmosphere, will lead to important gains in our understanding in areas including the chemistry and thermal balance of molecular clouds, the physics of interstellar shock waves, the life cycle of water during star formation, and the existence of "astrobiological" molecules. Future heterodyne space missions, beyond Spitzer and Herschel, can be expected to offer significant improvements in angular resolution at long wavelengths and I will discuss how this will benefit ISM studies.

From Spitzer to Herschel and Beyond Pasadena, California, June 2004 Conference Program and Abstracts